Remarks

Entry of the above-noted amendments, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claims 10-12 and 20 are amended and claims 21-25 are added. These amendments to the claims constitute a bona fide attempt by applicant to advance prosecution of the application and obtain allowance of certain claims, and are in no way meant to acquiesce to the substance of the rejections. Support for the amendments can be found throughout the specification (e.g., page 4, line 21, to page 7, line 15), drawings (e.g., FIGS. 1-2), and claims and thus, no new matter has been added. Claims 1-25 are pending.

Claim Rejections - 35 U.S.C. § 112:

Claims 5, 7, 10-12, 14, 17, and 19-20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended claims 10-12 to correct for the lack of antecedent basis. Also, Applicant has amended claim 20 to properly depend from claim 15.

In reference to claims 5, 7, 12, 14, 17, and 19, the Office Action (paragraph 2, page 2) stated: "the phrase 'the pendulous sensor component comprises a pressure sensitivity' is not clear on its meaning. What is considered a pressure sensitivity?" This rejection is respectfully, but most strenuously, traversed.

To advance prosecution, applicant presents the following exemplary explanation of the cited limitations. The pendulous sensor component comprises a pressure sensitivity. For example, pendulous sensor components are sensitive to changes in pressure during rate measurement. Pressure sensitivity of a pendulous sensor component is one source of error in the

rate measurement of a gyroscope. However, as described in claim 14, the location of the one or more pickoff sensors promotes a reduction in a pressure sensitivity of the pendulous sensor component. Therefore, due to the location of the pickoff sensors, the pendulous sensor component is less sensitive to changes in pressure during rate measurement.

Withdrawal of the § 112 rejection is therefore respectfully requested.

Claim Rejections - 35 U.S.C. §§ 102 and 103:

Claims 1-12 and 14-19 are rejected under 35 U.S.C. § 102(b) as being anticipated by either Peters (U.S. Patent No. 5,488,865) or Wyse (U.S. Patent No. 5,932,803). Claims 13 and 20 are rejected under U.S.C. § 103(a) as being unpatentable over either Peters or Wyse in view of either Cho, et al. (U.S. Patent No. 5,821,420; "Cho") or Ichikawa, et al. (U.S. Patent No. 6,041,653; "Ichikawa"). These rejections are respectfully, but most strenuously, traversed.

It is well-settled that there is no anticipation unless (1) all the same elements are (2) found in exactly the same situation and (3) are united in the same way to (4) perform the identical function. Since the Office Action's citations to each of the applied references is missing at least one element of each of applicant's independent claims, applicant respectfully submits that the claimed invention is not anticipated by the Office Action's citations to the applied references, as further discussed below.

Applicant respectfully submits that the Office Action's citations to the applied references, with or without modification or combination, assuming, *arguendo*, that the modification or combination of the Office Action's citations to the applied references is proper, do not teach or suggest one or more elements of the claimed invention, as further discussed below.

For explanatory purposes, applicant discusses herein one or more differences between the Office Action's citations to the applied references and the claimed invention with reference to

one or more parts of the applied references. This discussion, however, is in no way meant to acquiesce in any characterization that one or more parts of the Office Action's citations to the applied references correspond to the claimed invention.

Applicant respectfully submits that the Office Action's citations to the applied references do not teach or suggest one or more elements of the claimed invention. A careful reading of the Office Action's citations to the applied references fails to teach or suggest, for example, the one or more pickoff sensors that sense the value of the parameter from the substantially zero net dampening torque location of the pendulous sensor component, as recited in applicant's independent claim 1.

Peters (column 3, line 54, to column 4, line 31) discloses an accelerometer that includes a proof mass suspended by way of a flat leaf flexure suspended between upper and lower excitation rings. The proof mass in Peters is not in vibration. For example, the accelerometer of Peters is a DC device with no dither drive. Upon experiencing an acceleration, the accelerometer servos the pendulum back to a null position, and always has a net non-zero dampening torque during this servo operation.

In gyroscopes the dampening effect occurs when a drive oscillation causes the pendulum to move relative to its housing. This dampening is in phase with the Coriolis forces. Since the dampening is in phase with the Coriolis forces, the dampening generates bias errors in angular rate measurements. However, as described in applicant's claims, by locating the pickoff sensors at a substantially zero net dampening torque location, the effect of the dampening is reduced. The location of the pickoff sensors serves to eliminate the effects of the dampening torque generated by the dither drive at its resonant frequency. For example, the negative and positive torques cancel each other about the output axis.

The accelerometer in Peters includes dampening torque to aid in the stability of the servo loop, but it also introduces noise (Brownian motion) which actually degrades the performance of the accelerometer. This dampening increases the net dampening effect, rather than minimizing the net dampening effect.

Additionally, the dampeners (C_T and C_R) of Peters are simply dampening constants associated with an accelerometer and are not in any manner related to the Coriolis forces measured by a gyroscope. Peters does not disclose locating the dampening in a specific manner to reduce the net dampening effect, it only increases the net dampening effect. The existence of these dampers increases the dampening, its does not zero the damping torques.

The forcers and detectors of Peters are simply placed to optimize the dynamic characteristics for closed-loop servo operation without consideration to finding a zero net dampening torque location. Therefore, the Office Action's citation to Peters does not disclose all the elements of applicant's independent claim 1 found in exactly the same situation or united in the same way to perform the identical function. Simply missing from the Office Action's citation to Peters is any mention the one or more pickoff sensors that sense the value of the parameter from the substantially zero net dampening torque location of the pendulous sensor component.

So, the Office Action's citation to Peters fails to satisfy at least one of the limitations recited in applicant's independent claim 1.

Wyse (column 5, line 62, to column 11, line 49) discloses a multisensor that employs counter-oscillating rotor-mounted accelerometers to measure both linear and Coriolis accelerations. Upon experiencing a linear rate, the pickoff sensors 118 and 124 are used in the capture loop to servo the proofmass 116 to null by applying a torque to rebalance the non-zero

dampening torque that is present. Therefore, the dampening torque will be read as an error in the rate measurement. Servo 148 is the feedback required to cancel the dampening torque.

Also, the housing of the sensor moves along with the pendulum. Thus, Wyse does not disclose any remedy to the dampening effect from a drive oscillation that causes the pendulum to move relative to its housing. As described above, this type of dampening is in phase with the Coriolis forces and generates bias errors in angular rate measurements. The electrodes of Wyse are placed without consideration to finding a zero net dampening torque location. Therefore, the Office Action's citation to Wyse does not disclose all the elements of applicant's independent claim 1 found in exactly the same situation or united in the same way to perform the identical function. Simply missing from the Office Action's citation to Wyse is any mention the one or more pickoff sensors that sense the value of the parameter from the substantially zero net dampening torque location of the pendulous sensor component.

So, the Office Action's citation to Wyse fails to satisfy at least one of the limitations recited in applicant's independent claim 1.

The shortcomings of Peters and Wyse relative to certain elements of the claimed invention have been discussed above. The Office Action proposes a combination of either Peters or Wyse with either Cho or Ichikawa. However, Cho and Ichikawa do not overcome the deficiency of Peters and Wyse. Applicants respectfully submit that the proposed combination of either Peters or Wyse with either Cho or Ichikawa fails to provide the required configuration, assuming, *arguendo*, that the combination of either Peters or Wyse with either Cho or Ichikawa is proper. For example, neither Cho nor Ichikawa employ a pendulous sensor component. Simply missing from the Office Action's citation to Peters is any mention the pendulous sensor component that reacts to the parameter; and the one or more pickoff sensors that sense the value

of the parameter from the substantially zero net dampening torque location of the pendulous sensor component, as recited by applicant's claim 1.

The Office Action's citations to Peters, Wyse, Cho, and Ichikawa all fail to meet at least one of applicants' claimed features. For example, there is no teaching or suggestion in the Office Action's citations to Swam, Bingel, McNamara, or Guenther that the one or more pickoff sensors sense the value of the parameter from the substantially zero net dampening torque location of the pendulous sensor component, as recited in applicant's independent claim 1.

Furthermore, the Office Action does not allege that the art of record provides any teaching, suggestion, or incentive for modifying the citations to Peters, Wyse, Cho, and/or Ichikawa to provide the claimed configuration.

For all the reasons presented above with reference to claim 1, claims 1, 14, and 15 are believed neither anticipated nor obvious over the art of the record. The corresponding dependent claims are believed allowable for the same reasons as independent claims 1, 14, and 15, as well as for their own additional characterizations.

Withdrawal of the §§ 102 and 103 rejections is therefore respectfully requested.

In view of the above amendments and remarks, allowance of all claims pending is respectfully requested. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicant's attorney.

Respectfully submitted,

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